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TABLE OF CONTENTS

Page

Introduction 1

How to Use the Handbook 2

Planning Steps for Hazard Mitigation 3

Step 1 - Establish & Orient Hazard Mitigation Committee. . 4

Step 2 - Map Hazards & Identify Critical Facilities. . . 6

Step 3 - Assessing Vulnerability - Estimate Potential Losses . 10

Step 4 - Analyze Development Trends 14

Step 5 - Identify What's in Place & Gaps in Current Protection . 16

Step 6 - Brainstorm & Evaluate Disaster Minimization Alternatives 22

Step 7 - Determine Priorities 29

Step 8 - Develop Implementation Strategy 33

Step 9 - Adopt and Monitor the Plan 37

APPENDICES

A. TECHNICAL RESOURCES
B. SAMPLE MATERIALS FOR PLAN PREPARATION
C. CHECKLIST FOR DETERMINING COMPLIANCE WITH SECTION 409 OF THE DISASTER RELIEF ACT
D. STATE OF NEW HAMPSHIRE VULNERABILITY ASSESSMENT BY COUNTY
E. OVERALL GOALS OF THE STATE OF NEW HAMPSHIRE NATURAL HAZARD MITIGATION PLAN
F. ACRONYMS AND ABBREVIATIONS

INTRODUCTION

The purpose of this handbook is to provide New Hampshire communities guidance in addressing the issues involved in hazard mitigation. Federal law[1] sets forth a process whereby communities throughout the nation may be eligible for various grant programs and other assistance, upon completion of a local Hazard Mitigation Plan.

Examples of Hazards:

- Flooding
- Hurricanes
- Earthquakes
- Snow & Ice Storms
- Ice Jams/Flooding
- Dam Failures
- Wildfires
- Tornadoes
- Severe Wind
- Extreme Heat/Lightning

A local government must have a hazard mitigation plan approved pursuant to the Disaster Mitigation Act of 2000 (DMA 2000) in order to receive Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Program (PDM) project grants. Currently, the Interim Final Regulations requires a plan by November 1, 2004.

There exist a variety of natural hazards, and not every community faces the same kinds of threats. Using this book as guide, the end result would be the development of a Hazard Mitigation Plan for your town or city. This handbook is designed to be usable by small towns as well as large towns and cities. The basic assumption underlying this guide is that there is no "one Plan fits all" - each community can develop its own plan that fits the local needs.

The advantages of preparing a Hazard Mitigation Plan are several, but of central interest to New Hampshire town officials is that it allows towns to apply for various assistance programs, such as the Flood Mitigation Assistance Program or the Hazard Mitigation Grant Program.

The benefits of having a Plan in place before a disaster strikes include:

- *Potential for loss reduction in future events;*
- *The establishment of priorities for loss prevention ;*
- *Reduction of social, emotional and economic disruption caused by disasters; and*
- *Assignment of responsibilities for the mitigation initiatives.*

Examples of Hazard Mitigation:

Structural:

- ☑ construction of bridges to accommodate floodwaters
- ☑ elevation of structures above floodplain
- ☑ tie-down strapping for mobile homes
- ☑ stormwater/drainage management

Non-Structural:

- ☑ education/public information
- ☑ adoption of local regulations that prohibit or discourage development in sensitive areas
- ☑ installation of warning systems
- ☑ acquisition of land and buildings in sensitive areas

[1] 44CFR206.405

HOW TO USE THE HANDBOOK

This handbook is designed to guide local officials through the planning process in a step-by-step approach. The process consists of a logical series of steps that facilitate the collection and analysis of information, identifies reasonable mitigation measures, sets priorities, and determines appropriate mitigation actions.

The Plan itself should be based on the premises, goals and objectives of the State of New Hampshire Natural Hazard Mitigation Plan, which, in turn, derives its purpose and authority from the fore-referenced federal law (the Stafford Disaster Relief Act of 1974). The Overall Hazard Mitigation Goals of the State of New Hampshire Natural Hazard Mitigation Plan are included in Appendix E for reference for all communities intending to undertake the development of a local Hazard Mitigation Plan. At a minimum, the local plan should contain the following:

- Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.
- An evaluation of the natural hazards within the community.
- An estimate of potential dollar losses to identified vulnerable structures.
- A general description and analysis of land uses and development trends in the community.
- A description and analysis of local, state, and federal hazard mitigation policies, programs, and capabilities to mitigate the identified hazards in the area.
- Goals, objectives and proposed strategies, programs, and actions based on a cost/benefit review to reduce or avoid long-term vulnerability to hazards.
- A method of implementing, monitoring, evaluating and updating the Plan.

Once the plan is completed, it should be reviewed and updated on a regular basis. Bear in mind that the plan serves as a reference and justification for a variety of capital projects and programs.

The planning process described in the Handbook is divided into nine steps, illustrated on the following page. The format for the nine steps is a one or two page explanation followed by a checklist, examples, and references that support that step. Attached to the Handbook are appendices that provide more detailed information on state and federal agency resources and publications, points of contact, and sources of potential financial and technical assistance.

PLANNING STEPS FOR HAZARD MITIGATION

Step 1:
Establish & Orient Hazard Mitigation Committee
Getting Started

Step 2:
Map the Hazards - *Where Are They?*
Identify Critical Facilities - *Potential and Actual*

Step 3:
Assessing Vulnerability
Estimate Potential Losses

Step 4:
Analyzing Development Trends
Community Change

Step 5:
Identify What's in Place - *What Are We Already Doing?*
&
Identify Gaps in Current Protection - *Where Are The Gaps?*

Step 6:
Brainstorm & Evaluate Disaster Minimization Alternatives
What Feasible Actions Can Be Taken?

Step 7:
Select Actions
What Are Our Priorities?

Step 8:
Develop a Strategy
How Do we Implement Actions?

Step 9:
Adopt and Monitor the Plan - *Putting It All Together*

STEP 1:
ESTABLISH & ORIENT LOCAL HAZARD MITIGATION COMMITTEE
GETTING STARTED

Before beginning any of the planning steps outlined on the following pages, the most important first step is to form a committee that will be involved in either managing the entire process, or in providing for the public input that is essential to the development of a meaningful plan. All of the nine steps depend upon public input, not just from the local Hazard Mitigation Committee, but also from a broad cross section of the community.

While much of the data collection and analysis can be done by small groups or even individuals, the knowledge and perspective of local officials and residents is necessary to gather historical information, and of course to decide upon appropriate steps for mitigation. The box on this page lists some examples of persons who could participate in the planning process. The list is, of course, not exclusive; any other individuals or representatives with special knowledge should be invited to participate.

As the Committee works its way through the process of plan development, it should keep in mind the importance of coordinating and /or informing other agencies and organizations of the proposed actions as they are developed. The advantages of this notification include:

- Improved access to technical assistance and financial resources (other agencies are more likely to assist with the community mitigation plan if your ideas also meet their goals)
- Better solutions developed for multiple problems
- Broader support can be provided for implementation
- Reduced chances of duplicating or conflicting with existing efforts.

SUGGESTED MEMBERS OF A HAZARD MITIGATION TEAM:

- Member of Board of Selectmen or City Council
- Member of Planning Board and/or Town or City Planner, if applicable
- Member of the local Conservation Commission
- Member of Historic District Commission
- Member of the School Board
- Building Inspector/Code Enforcement Officer
- Local Health Officer
- Road Agent/Public Works Director
- Police Chief
- Emergency Management Director
- Fire Chief
- Engineer
- Representative of the Business Community
- Representatives of neighboring communities if mitigation problems and/or solutions affect them.
- Long Standing Community Member

CHECKLIST FOR STEP 1

- ❑ Mail letters to potential Committee members using the sample letter in Appendix B, and advertise "kick-off" meeting in the local newspaper using the sample notice in Appendix B.

- ❑ Orient Committee members on hazard mitigation using the PowerPoint presentation found on the companion CD attached to the back cover of this handbook.

- ❑ At the first meeting of the Hazard Mitigation Committee, the members should select a Chair, and decide on a meeting location and schedule.

- ❑ One member of the Committee may be chosen to handle public relations. Suggestions for this part of the process appear in the box.

- ❑ Regarding coordination and/or notification of the Committee's actions with other relevant agencies, the following suggestions are offered:

  1. Check with local officials and organizations first. Then examine local and regional plans, including any comprehensive plans, economic development, environmental preservation, open space, water quality, parks and recreation, or transportation plans. Do any of these include activities, measures, or recommendations complement or compete with the proposed mitigation actions?

  2. Once actions have been identified, send a letter describing the identified mitigation actions for your community to agencies and organizations considered relevant (see Appendix A for addresses and telephone numbers). Request a review of the proposed actions and ask if they are aware of any plans that can be coordinated with the identified actions.

  3. In the event of any identifiable impacts or duplications, notify the appropriate agency.

METHODS FOR SOLICITING PUBLIC INPUT

- ❖ **Hosting Public Input Workshops**
  A member of the Hazard Mitigation Committee can act as facilitator of the workshop and use the opportunity to brainstorm with people about past experiences, problems and issues related to natural hazards.

- ❖ **Questionnaires**
  There are a variety of ways to utilize questionnaires. These may be distributed in tax or utility bills, or mailed separately. They might also be hand delivered to residents with either a stamped return envelope, or with a time predetermined for the collection of the questionnaire. Or, a table could be set up a local shopping center or other public gathering place**.**

- ❖ **Local Access Cable Television & Radio**
  Local television can be a good source for the dissemination of information and opportunities for feedback. Any meetings could be broadcast, and could include video footage of local natural disasters, as well as telephone numbers of team members who are designated to accept comments from the public. Radio programs can also broadcast discussion of the planning exercise, featuring team members and allowing for call-in response to requests for information

STEP 2:
MAP THE HAZARDS – *WHERE ARE THEY?*
&
IDENTIFY CRITICAL FACILITIES – *POTENTIAL AND ACTUAL*

At the end of Step 2, you will have created a product that:

- Depicts natural hazards visually
- Provides a comprehensive view of hazard potential
- Helps focus mitigation efforts on specific areas

And you will have an estimate of:

The number of structures, public and private infrastructure, and historic, natural and cultural features that could be impacted by a natural hazard.

Step 2A: One of the first steps in planning for any natural hazard is to know where they have occurred in the past. Locating these hazards on a map helps to visualize what structures and features could be impacted by any particular hazard event. Reference to the State of New Hampshire Natural Hazards Mitigation Plan (See Companion CD) can help identify the sorts of hazards that are likely to have occurred in your community.

You will want to begin with what is known as a "Base Map". Every community in New Hampshire should have a Base Map that was developed at some point by its regional planning commission. These maps illustrate – at a minimum - the political boundaries, water bodies and courses, and the road network. There may also be a need to use a topographic map that provides contour lines and base elevations. In addition, the 100-year floodplain limits should be delineated on the base map. This information is obtainable from FEMA's Flood Insurance Rate Maps (FIRM) developed for the National Flood Insurance Program.

Early Base Maps were created by hand using USGS (United States Geologic Survey) data as the primary source. This information is obtainable from FEMA's Flood Insurance Rate Maps (FIRM) developed for the National Flood Insurance Program. All regional planning commissions in the state now have GIS technology, which allows the creation of maps on computers. For communities with computer capabilities, the GIS information from the planning commissions could be made available.

The community base map showing the location of past hazard events, as well as potential hazard events, could be called *Past & Potential Hazard Events.* The community base map should be on display when mitigation issues and proposals are discussed. The map will provide an important reference for triggering ideas and provides a convenient surface for recording data and notations generated by planning discussions. Maps should be pinned up at meetings when hazard types, locations and solutions are being studied and evaluated.

Step 2B: The next step for the Hazard Mitigation Committee is to identify critical facilities and make an inventory of these facilities. As part of this process, the Committee will also begin to understand not only what is vulnerable to any given hazard, but also what the level of risk from an event would be. This step will help to narrow the focus of where action will be needed to mitigate damage.

Critical Facility

A Critical Facility is a building, structure or location which:

- Is vital to the hazard response effort.
- Maintains an existing level of protection from hazards for the community.
- Would create a secondary disaster if a hazard were to impact it.

Examples of Critical Facilities

(See Companion CD for further details in defining critical facilities)

Structures:

- Bridges
- Major Highways/Roads
- Dams
- Water Treatment Facility
- Sewage Treatment Plant
- Water Tower
  Electrical Substation

Buildings:

- Emergency Operations Center
- Emergency Fuel Facilities
- Town/City Hall
- Police Station
- Fire Station
- Public Works Garage
- School
- Hospitals
- Nursing Homes
- Elderly Housing
- Day-care Facilities
- Correctional Facilities
- Hazardous Material Facilities

Locations:

- Special Needs Population
- Recreation Facilities
- Busy Commercial Facilities
- Evacuation Routes
- Economic Impact Areas
- Shelters

All of this information should be added to a second base map called *Critical Facilities and Areas of Concern* to create a graphic depiction of what is at risk in your community.

CHECKLIST FOR STEP 2A

- ❑ Contact the local Regional Planning Commission for assistance in obtaining a base map of your community and a USGS topography map.

- ❑ Look into the availability of a GIS map. If this is attainable, the separate topographical map will not be necessary, as topography is available as a data layer with the GIS map.

- ❑ Make several copies of the community base map for use at planning meetings and in brainstorming sessions. The maps will be used to summarize comments, findings, ideas, and areas of focus and recommendations.

- ❑ Collect information on past hazard events from residents, town officials, the media, and the NH Office of Emergency Management (at 271-2231).

- ❑ Illustrate this information on the base map with text and symbols, or in any fashion that makes clear from looking at the map what hazards have impacted the community, and where they have occurred; for example: flooding of particular roads; or an ice storm that devastated a particular stand of trees.

CHECKLIST FOR STEP 2B

- ❑ Use the FEMA Flood Hazard Boundary Maps and/or Floodway Maps to delineate on the Base Map the special flood hazard areas in your town, if any. Contact NH Office of Emergency Management to obtain information about floodplain map amendments or revisions for your town.

- ❑ Contact NH Department of Environmental Services, Dam Division at 271-2503, for information on dam locations and conditions. Identify all dams on the Base Map.

- ❑ Get a copy of your local Master Plan to obtain information on natural resources, open space, recreational facilities, community facilities, and transportation infrastructure.

- ❑ Develop a list of Critical Facilities (as described on the preceding page) in town – whether they are currently in an identified hazard area, or have already experienced hazard damage. Indicate the locations on the Base Map.

- ❑ Identify critical transportation routes and potential evacuation routes on the Base Map.

- ❑ List all historic, cultural, and natural features that could be vulnerable to hazard events. Indicate the locations on the Base Map.

- ❑ Additional sources of information for locating hazards within your community can be found in Appendix A.

PRODUCTS

- A BASE MAP FOR YOUR COMMUNITY THAT IDENTIFIES ALL KNOWN PAST & POTENTIAL HAZARD EVENTS.
- A MAP THAT SHOWS STRUCTURES VULNERABLE TO HAZARD AND THE INFRASTRUCTURE THAT WOULD BE CALLED UPON FOR RESPONSE AND EVACUATION.
- A LIST OF CRITICAL FACILITIES POTENTIALLY OR ACTUALLY SUBJECT TO HAZARD DAMAGE.

STEP 3:
ASSESSING VULNERABILITY – *ESTIMATING POTENTIAL LOSSES*

In step 2 you utilized Base Maps of your community to visually represent the location and extent of all known past and potential hazard events along with the location of critical facilities within the locality.

STEP 3: Now that you have developed a list of past and potential hazards, the next step is to assess the community's vulnerability to each of those hazards. The first task in this step is to gather historic and current information pertinent to each of the hazards which your community is vulnerable to. To assess what your community is vulnerable to, you should review the map you constructed in step 2B and make an inventory of the features listed below. This process should enable you to complete the *Vulnerability Assessment Worksheet* on page 12.

- ✓ The types and numbers of structures in identified hazard areas.
- ✓ The location and number of structures that have suffered repetitive losses from flooding or other natural disaster.
- ✓ The number and type of facilities in town that are critical to emergency response operations, such as police and fire departments.
- ✓ The number and type of facilities in town that are critical to public health and safety, such as hospitals and shelters.
- ✓ Public "Gathering Places", such as arenas for special events, major employers, schools, etc.

An overview of New Hampshire's natural hazards vulnerability by county can be found in the State of New Hampshire Natural Hazards Mitigation Plan, Page 84 (accessible over the Internet at www.nhoem.state.nh.us *and included in the Appendix).*

- ✓ The critical roads and bridges on potential evacuation routes.
- ✓ Unique historic, cultural, or natural resources.

CHECKLIST FOR STEP 3

- ❑ Contact FEMA Region I or NH Office of Emergency Management for information about repetitive loss properties in town.
- ❑ Contact NHOSP for information on how many structures (residential and non-residential) are located in the floodplain.
- ❑ Visit http://geohazards.cr.usgs.gov for information regarding Earthquakes.
- ❑ Contact your NHOEM and local NOAA office for info regarding Tidal waves
- ❑ Discuss the town's design wind speed with the local Building Inspector.
- ❑ Contact your local planning commission or USDA for Soil Map information.
- ❑ Determine the town's susceptibility to wildfires with local foresters and state forest/park rangers.
- ❑ Identify areas which could be vulnerable to sever drought and heat through historic records.
- ❑ Obtain information from FEMA, OEM and US Army Corps of Engineers regarding possible inundation zones and flood rates in the occurrence of a dam breach.
- ❑ Gain information from CRREL to better identify areas susceptible to impacts from severe winter weather.
- ❑ Acquire tax assessment data from town office to complete Number of People and Approximate Value on the Vulnerability Assessment worksheets

PRODUCT

An estimate of potential loses for the hazard events which could impact your community and its vulnerable critical facilities.

Note: For additional information on assessing your Town's vulnerability and estimating potential losses visit FEMA's website at http://www.fema.gov/fima/planning_toc3.shtm to download the how-to guide "Understanding Your Risks – identifying hazards and estimating losses".

Vulnerability Assessment - Worksheet

Hazard _____

(i.e. Flood, Dam Breach, Wildfire, Earthquake, etc.)

Building Type	# of People	# of Buildings	Approximate Value
Residential			
Commercial			
Industrial			
Critical Facilities:			
Fire			
Police			
EMS			
Hospital			
School			
Sewer			
Water			
Shelters			
Others:			
TOTAL:			

Potential Loss Estimates
Summary Sheet

Hazard	Total # of People	Total # of Buildings	Total Approximate Value
Flood (Riverine)			
Flood (Dam Breach)			
Flood (Ice Jam)			
Drought			
Extreme Heat			
Wildfire			
Earthquake			
Landslide/Subsidence			
Winter Weather			
Severe Winds: (Hurricane, Tornado & Downburst)			
Man-Made Hazards			
TOTAL:			

STEP 4:
ANALYZING DEVELOPMENT TRENDS - *COMMUNITY CHANGE*

Step 4: You will review and delineate your community's current development trends. This exercise enables the committee to understand where growth is happening presently in town giving them an idea how to plan for future growth when developing mitigation actions, thus promoting sustainable development.

At the end of step 4, the committee will have a map, list of existing development patterns, considerations for future development, and a summary of current development trends in the town.

The next step in the process of developing a Hazard Mitigation Plan is to assess the current development trends within the community. Once again the committee will turn to a mapping exercise, this time to identify the development patterns throughout town. A review of the town master plan the local zoning ordinances will also be helpful in this step because they will most likely contain language about governing the way development can take place within the town. During this step the committee will focus on:

- ✓ How intelligent development decisions in the community can ultimately lead to reduced costs for the citizens, less extensive response, recovery and rebuilding after a disaster.
- ✓ Pre-development mitigation planning strategies that could ultimately lead to a sustainable and disaster resistant community.
- ✓ Past development trends that are in need of mitigation.
- ✓ Development that is slated for the future which could be a liability at some point.
- ✓ Current zoning and ordinances in place that demonstrate sustainable development practices.

FACT

Since 1993, FEMA has spent more than $20 billion in over 5000 communities on disaster recovery. Growing costs are due in large part to the fact that more development stands in harm's way than ever before.

CHECKLIST FOR STEP 4

- ❑ Use a base map to visually represent where development has taken place, is taking place, and is slated to take place. The map can be used as a tool to complete the analysis of development trends.
- ❑ Review the town master plan for language regarding goals and objectives for development in the community.
- ❑ Obtain input from the local planning board members regarding any trends they have seen while serving as board members.
- ❑ Review the town zoning ordinances.
- ❑ Evaluate the town land use map to see what areas have potential for future development and what areas will remain undeveloped.
- ❑ Assess current infrastructure maps to understand where public water and sewer systems have been developed with potential to expand.
- ❑ Understand where improvements are or will be taking place to the local transportation system by talking with the local Highway Superintendent.
- ❑ Make sure to include substantial capital improvement projects.
- ❑ Recognize development trends in neighboring communities and their potential effect on your town.

PRODUCTS

- A map that shows where development has, is, and will be taking place.
- A list of past, present and future development projects
- An idea of to how plan out your mitigation actions for sustainable development throughout your community.

STEP 5:
IDENTIFY WHAT'S IN PLACE – *WHAT ARE WE ALREADY DOING?*
&
IDENTIFY GAPS IN CURRENT PROTECTION –*WHERE ARE THE GAPS?*

In Steps 2, 3, and 4, you identified the actual and potential hazards and determined what is vulnerable and the level of risk for those features in your community.

In Step 5, you will determine what is being done locally and at the state level to mitigate hazards by creating a list of items and activities already in place that solve or prevent hazard-related damage. You will then evaluate the effectiveness of these existing measures, identify where they can be improved, and determine your goals to reduce hazard risks in vulnerable areas.

A summary of the types of loss prevention programs at the state and federal level that may provide assistance to your community can be found on the Companion CD. Following is a list of actions/activities that can be undertaken at the local level to mitigate damage from natural hazards.

PREVENTION/LIMITATION TO DEVELOPMENT

- Local zoning (e.g., floodplain, development on steep slopes)
- State/federal ownership of land that is subject or susceptible to damage
- Local or non-profit ownership of conservation land, including parks, playgrounds, buffer areas, bicycle paths, wildlife sanctuaries, etc.
- Natural limitations to development (slopes, soils, high water tables, etc.).
- State/local development requirements; state wetlands statutes and regulations; National Flood Insurance Program participation and floodplain provisions, building codes, subdivision and site plan review regulations.

Plans That Take Natural Hazards Into Account:

- Natural Resources Plans
- Open Space/Recreation Plans
- Emergency/Flood Evacuation Plans
- River Stewardship Plans (for those towns within a river corridor)
- Watershed Plans

Physical Protection From Known Hazards:

- Elevated Structure
- Floodproofed Structures
- Acquired or Relocated Structures
- Seawalls, Levees, Beams, Tidegates, Dams
- Warning Systems

To obtain the above information, contact the local Department of Public Works or Road Agent, the NH Office of Emergency Management, the NH Department of Environmental Services (dam breach mitigation information), US Army Corps of Engineers and the Natural Resource Conservation Service. Also check with your Building Inspector or Code Enforcement Official to determine if local property owners have demolished, relocated or retrofitted structures in the flood hazard areas through Federal acquisition, relocation, retrofitting or floodproofing programs or on their own.

Next, evaluate the existing protection measures and identify the gaps or needs to strengthen these measures. Try to answer the main question: Where is the community unprotected? Are there risk areas that are not covered by some sort of existing protection? The evaluation takes into account:

- **The geographic extent of the hazard area.** This is asking you to think quite literally about WHERE on the ground the gaps may exist in the community's protection.

- **The effectiveness of your protection.** Ask if existing protection measures are adequate. Consider the level of effectiveness of existing policies or programs listed in the Matrix. Your plan could be an agreement to continue to enforce existing regulations and maintain existing systems. If there are gaps in hazard protection, your plan needs to address what actions will be taken to improve hazard protection and the ultimate elimination of the cause of losses.

SAMPLE GOAL STATEMENTS:

- Improve the Town's ability to protect properties from flooding.
- Support all efforts to minimize or eliminate any development within the Special Flood Hazard Area.
- Support the adoption of building codes that are aimed at minimizing damage from natural hazards.
- Make all efforts to ensure that the Town's public infrastructure is protected against hazard events.

The identification of gaps in protection leads to the development of Goals for the community to achieve in hazard mitigation. For example, you may discover through the application of Step 5 that your local floodplain ordinance does not adequately address the issue of manufactured housing in the Special Flood Hazard Area. Or that you have no building codes that require flood-resistant materials within the Special Flood Hazard Area. Examples of Goals are presented in the box above.

CHECKLIST FOR STEP 5

On the following pages you will find an Existing Protection Matrix. **Make several copies of the blank matrix page before you begin.** Enter in Column 1 of the matrix all actions, policies or programs that are currently in place in your community that provide protection from hazards.

Column 1

- ❑ Check local regulations for provisions that prohibit or restrict development in flood prone areas.
- ❑ Check with your Building Inspector to determine if any property owners have demolished, relocated or retrofitted structures in the flood hazard areas.
- ❑ Contact NH Office of Emergency Management to determine if your community participates in the Community Rating System.
- ❑ Inquire with the Selectmen or City Council whether or not your community has an emergency operations plan in place, evacuation plan, or a flood warning system.
- ❑ Determine whether your community has any flood control structures and what those structures are intended to protect.
- ❑ Check local zoning ordinance for any restrictions on development in wetland areas (e.g. minimum lot sizes, setbacks), or within steep slope areas.
- ❑ Check local subdivision and site plan review regulations for any provisions relating to flood protection, or any other mitigation measures.
- ❑ Check local ordinances to determine whether there are any building codes in effect that address standards for damage from wind, earthquake, fire, ice storms, hurricanes, etc.
- ❑ Review the local Master Plan for any policies, goals, or objectives relative to protecting the town from natural hazards.
- ❑ Does your community have a Hazard Tree Inventory (removal of limbs that damage property, block streets, impair water flow, break power and communications lines)?
- ❑ Does your community participate in the River Stewardship Program?

Column 2

- ❑ Briefly describe the focus/intent of each of the existing protection measures identified in Column 1 of the Matrix, and enter this information into Column 2.

Column 3

- ❑ Using the Base Map, determine the physical area that is being protected and enter it in

Column 3 on the Matrix. This could be the entire community, the 100-foot buffer zone around wetlands, a particular neighborhood, the banks of a river, or a shoreline, for example.

Column 4

- ❑ Make a determination as to the effectiveness of the protection measure and enter it into Column 4 of the Matrix. For example, is it good enough or do you need to do more?

Column 5

- ❑ Depending on how effective a particular measure is, you may want to develop some suggestions for improvements to the existing measure, or add additional measures that can be taken. Enter this information into Column 5 of the Matrix.

- ❑ Using the matrix as a guide, prepare your community's goal statements for hazard mitigation. Focus on the geographic areas and facilities that are at risk, as well as needed improvements in existing protection measures. These general goals are useful for communicating to others what it is the townspeople want to do.

PRODUCTS

- A completed matrix that shows areas protected by existing measures, a rating of how well these measures work, and suggestions for improvements to these existing programs or policies.
- General goal statements derived from the matrix that state what the community wants to do to reduce damage from natural hazards.

EXISTING PROTECTION MATRIX (EXAMPLE)

COLUMN 1: TYPE OF EXISTING PROTECTION	COLUMN 2: DESCRIPTION	COLUMN 3: AREA OF TOWN COVERED	COLUMN 4: EFFECTIVENESS AND/OR ENFORCEMENT	COLUMN 5: GAPS IN EXISTING PROTECTION/RECOMMENDED IMPROVEMENTS
Example: Floodplain Management District	Requires elevation of new or improved structures in floodplain; prohibits hazardous materials in floodplain.	100-year floodplain as shown on Flood Insurance Rate Map dated April 15, 1983	Enforced by Selectmen or Code Enforcement Officer; variances rarely granted; additional flood areas are not included in the district	Need to include newly identified flood hazard areas in the zoning district; should encourage lower development density in the flood hazard areas.

EXISTING PROTECTION MATRIX

COLUMN 1: TYPE OF EXISTING PROTECTION	COLUMN 2: DESCRIPTION	COLUMN 3: AREA OF TOWN COVERED	COLUMN 4: EFFECTIVENESS AND/OR ENFORCEMENT	COLUMN 5: GAPS IN EXISTING PROTECTION/RECOMMENDED IMPROVEMENTS

STEP 6:

BRAINSTORM & EVALUATE DISASTER MINIMIZATION ALTERNATIVES - *WHAT FEASIBLE ACTIONS CAN BE TAKEN?*

In Step 5, the Mitigation Committee completed the Existing Protection Matrix and developed goals for hazard mitigation based on the identified gaps in protection.

Step 6 asks the Committee to focus in more depth on actions to reduce further damages from hazards. At the end of this step, the Committee will have a list of mitigation actions that are considered feasible to implement.

To begin this step, use the list created in Step 5 to fill in the Brainstorming Matrix following this section. Later, these ideas will be evaluated according to specific criteria.

As the group generates new ideas, it helps to keep the actions organized for comparison and discussion. One way to do this is to place each action into one of the following five categories:

- PREVENTION
- PROPERTY PROTECTION
- STRUCTURAL PROJECTS
- EMERGENCY SERVICES
- PUBLIC INFORMATION

Prevention: planning, zoning, open space preservation, floodplain and wetland development regulations, stormwater management, hazard tree inventory, best management practices, soil erosion and sediment control and dam Emergency Action Plans.

Property Protection: building relocation, acquisition, building elevation, utility relocation or floodproofing, sewer backup protection, insurance and minimization actions.

Structural Projects: levees, berms, dams, floodwalls, tide gates, channel improvements, beach renourishment, drainage and sewer improvements, detention/retention basins, larger culverts and higher flood standards for construction projects.

Emergency Services: flood threat recognition, flood warning, flood response, protection of critical facilities, health and safety maintenance and river gauging.

Brainstorming Suggestions

✓ member should contribute their ideas towards defining a workable solution for the problem.

✓ strive for quantity over quality, use free association and your imagination. Don't accept just the "standard" answers as the only possible solutions.

✓ going, you may need someone to keep track of all the ideas -- use a flip-chart!

✓ out during this step. Maintain respect for individual and unique ideas.

Public Information: providing map information, informational mailings or workshops, real estate disclosure of flood hazards, environmental education, and technical assistance provided on hazard mitigation techniques.

Once all of the possible actions have been offered, the use of basic evaluation criteria can help the community decide which actions will work best. **The most important criterion is whether or not the proposed action mitigates the natural hazard: How effective will the action be in reducing or preventing damage?**

Each action should be examined for its contribution to other goals. It is important to consider whether the proposed action will meet state and local environmental regulations. Does it affect historic structures or archeological areas? Does it help achieve multiple community objectives? Another issue is timing: How quickly does the action have to take place to be effective? Which actions will produce quick results? Quick result projects may receive a high priority during the recovery period following a disaster. Project implementation that takes a longer term could be initiated before the next natural hazard event occurs.

CHECKLIST FOR STEP 6 (USE BRAINSTORMING TABLE)

- ❑ As actions are suggested during the brainstorming session, place them under a category listing. This can be done by having easels around the room for the five categories (Prevention, Property Protection, Emergency Services, Structural Projects and Public Information) and writing each suggestion on the appropriate easel. Brainstorm for all types of hazards.

- ❑ Follow up the brainstorming session by obtaining as much detail as possible about each action. This will help you to evaluating possible actions.

- ❑ Take advantage of existing technical assistance. Invite regional, state or federal agency staff people to the brainstorming sessions, or ask them to submit suggestions to your Committee in writing.

- ❑ At the committee's option, members of the general public, staff from the State Hazard Mitigation Section of the NH Office of Emergency Management, staff from the Regional Planning Commission or Federal resource people can be invited to offer ideas. Keep in mind that this is a means of getting as many ideas as possible; all suggestions are welcome.

- ❑ For each action, first answer the question of whether or not it will reduce the disaster damage. All actions should be graded according to perceived effectiveness.

- ❑ Determine whether or not the proposed mitigation action is a complete solution or will need to be combined with other measures.

- ❑ Evaluate each action by asking the questions listed in the chart. How well does the action fit the STAPLEE criteria (see text box below)?

- ❑ Keep track of the responses to the STAPLEE criteria for each action.

- ❑ Use the chart to record the evaluation "grades" for each proposed action. Comparing the columns of grades will provide a direction to the most feasible and effective mitigation initiatives.

STAPLEE is an acronym for a general set of criteria common to public administration officials and planners. It stands for the Social, Technical, Administrative, Political, Legal, Economic, and Environmental criteria for making planning decisions. Questions to ask about suggested actions include:

- ***Social***: Is the proposed action socially acceptable to the community? Are there equity issues involved that would mean that one segment of the community is treated unfairly?
- ***Technical:*** Will the proposed action work? Will it create more problems than it solves?
- ***Administrative:*** Can the community implement the action? Is there someone to coordinate and lead the effort?
- ***Political:*** Is the action politically acceptable? Is there public support both to implement and to maintain the project?
- ***Legal:*** Is the community authorized to implement the proposed action? Is there a clear legal basis or precedent for this activity?
- ***Economic:*** What are the costs and benefits of this action? Does the cost seem reasonable for the size of the problem and the likely benefits?
- ***Environmental:*** How will the action impact the environment? Will the action need environmental regulatory approvals?

EXAMPLES OF IDEAS THAT COULD BE INCLUDED IN THE BRAINSTORMING LIST:

- Place a statement in the subdivision and site plan regulations that requires "Best Management Practices" for road building and erosion control in all construction projects.
- Place in the floodplain ordinance and in the subdivision and site plan regulations a statement that new public water and sewer facilities shall be constructed to withstand and accommodate the 500 year flood elevation and volume of water.
- Require that all existing and new dams shall meet State of New Hampshire regulations regarding engineering design, inspections for maintenance and plans for dam failure; coordinate with the Department of Environmental Services, Dam Safety Division.
- Suggest that the Town undertake to purchase certain extremely sensitive properties and restrict or prohibit any development on those properties.

PRODUCT

A list of actions that your community could take to minimize damage from natural hazards, with information on how each action fits in with community criteria and the costs and benefits (social, environmental, economic) of each action.

BRAINSTORMING IDEAS FOR MITIGATION ACTION

(Example)

HAZARD	PREVENTION	PROPERTY PROTECTION	STRUCTURAL PROJECTS	EQUIPMENT PURCHASE	PUBLIC INFORMATION
EXAMPLE: Flooding	Join National Flood Insurance Program	Require all buildings in the Flood Hazard Areas to be floodproofed	Require all culvert replacement and other road projects to be conducted in accordance with NFIP standards	River Gages	Participate in the Community Ratings System

BRAINSTORMING IDEAS FOR MITIGATION ACTION

HAZARD	PREVENTION	PROPERTY PROTECTION	STRUCTURAL PROJECTS	EMERGENCY SERVICES	PUBLIC INFORMATION

EVALUATION CHART
(Example)

Use this chart to rate each proposed mitigation action. **MAKE ENOUGH COPIES OF THIS CHART SO THAT THERE IS ONE CHART FOR EACH ACTION THAT IS TO BE EVALUATED.** Assign a score for each of the 14 criteria based on its ability to accomplish the stated goals.

Mitigation Action: Join National Flood Insurance Program

CRITERIA:		Evaluation Rating			Score
		Good (3)	Average (2)	Poor (1)	
Does it reduce disaster damage?		3			3
Does it contribute to other goals?		3			3
Does it benefit the environment?			2		2
Does it meet regulations?		3			3
Will historic structures be saved or protected?			2		2
Does it help achieve other community objectives?		3			3
Could it be quickly implemented?			2		2
S	Is it **S**ocially acceptable?	3			3
T	Is it **T**echnically feasible and potentially successful?	3			3
A	Is it **A**dministratively workable?	3			3
P	Is it **P**olitically acceptable?		2		2
L	Is there **L**egal authority to implement?	3			3
E	Is it **E**conomically beneficial?		2		2
E	Are other **E**nvironmental approvals required (e.g., EPA)?	3			3
Others:					
TOTALS					**37**

EVALUATION CHART

Use this chart to rate each proposed mitigation action. **MAKE ENOUGH COPIES OF THIS CHART SO THAT THERE IS ONE CHART FOR EACH ACTION THAT IS TO BE EVALUATED.** Assign a score for each of the 14 criteria based on its ability to accomplish the stated goals.

Mitigation Action: _____

CRITERIA:		**Evaluation Rating**			**Score**
		Good (3)	Average (2)	Poor (1)	
Does it reduce disaster damage?					
Does it contribute to other goals?					
Does it benefit the environment?					
Does it meet regulations?					
Will historic structures be saved or protected?					
Does it help achieve other community objectives?					
Could it be quickly implemented?					
S	Is it **S**ocially acceptable?				
T	Is it **T**echnically feasible and potentially successful?				
A	Is it **A**dministratively workable?				
P	Is it **P**olitically acceptable?				
L	Is there **L**egal authority to implement?				
E	Is it **E**conomically beneficial?				
E	Are other **E**nvironmental approvals required (e.g., EPA)?				
Others:					
TOTALS					

STEP 7:
SELECT ACTIONS – *WHAT ARE OUR PRIORITIES?*

In Step 6, the Committee developed a list of mitigation actions considered feasible to implement, based on certain evaluative criteria.

In Step 7, you will be asked to further refine the list of mitigation objectives developed in Step 6 that are appropriate to your community, and prioritize them in order of importance

During the evaluation process of Step 6, the Committee should have developed a sense of what would be the minimal acceptable level of effort for the identified actions. The Evaluation Chart encouraged the rating of suggested actions as either "good", "average" or "poor" in order to facilitate a distinction between feasible action and merely desirable, but not very feasible.

In this step, the Committee will return to the STAPLEE criteria of Step 6 to begin the process of prioritizing the actions listed. Before beginning the process of prioritizing these various actions, the Committee should establish a formal minimum threshold. Of the actions that meet the minimum threshold, select those that do the best job of reducing damages, and that meet a majority of the community's criteria for acceptability.

In order to prioritize the actions listed, the Committee must conduct a cost/benefit review of all actions and determine a reasonable benefit-cost ratio of actions and projects. Prioritization should be based on this review.

Prioritization should focus on what is most important to reducing damage. Some of the most important actions may be easily achievable, such as conducting outreach workshops to encourage the purchase of flood insurance. Other activities may not be easily achievable, due to lack of funding, current regulations, or lack of technical or staff support. It's a good idea to have a few easily achievable projects as top priorities. This will help build

EXAMPLES OF PRIORITY-SETTING CRITERIA:

- Actions that have the highest benefit-cost ratio.
- Actions that will benefit the greatest number of residents and/or the greatest number of structures (roads, bridges, homes, offices, utility facilities, etc.).
- Actions that are the easiest to accomplish with local equipment, materials and labor or with available funds.
- Actions that will offer the greatest protection for municipal facilities (sewer, water, roads, offices, schools, library)
- Actions that respond to and reduce obvious or imminent future damages.
- Actions that do not conflict with the town Master Plan.

EXAMPLES OF MINIMUM CRITERIA:

- You have limited funds to commit to hazard mitigation, yet town officials believe this is important public policy. Therefore, they will agree on some immediate actions that can be undertaken by a group of volunteers - for instance, setting up an education program in the town library. At the same time, they will work toward acquiring the funds to carry out long-term projects.
- The Selectmen sent out requests for quotes for inspecting and repairing all town dams. The notice stated that in order to be considered for the work, there must be a minimum benefit-cost ratio of 1:0.
- The Long-Term Planning Committee has determined that any amendments to the zoning ordinance relative to hazard mitigation will only be beneficial if the action protects a minimum of 50% of the structures in risk-prone areas.

"bite-sized successes" and can encourage the Committee to go after some of the more challenging projects. The more complex and time-consuming actions can remain as top priorities, and be implemented as part of the ongoing process of hazard mitigation. Certain criteria can help measure the effectiveness of proposed actions and help set an order of priority.

Checklist for Step 7

❑ Establish a minimum acceptable level for actions. Consider the following:

- ✓ Look at both immediate actions and long-term projects.
- ✓ Review applicable regulations for guidance in setting technical standards and criteria.
- ✓ Determine available funding resources.
- ✓ Set technical and administrative personnel requirements.
- ✓ Determine reasonable cost-benefit ratio of actions and projects.

❑ Select those actions that best fit the community's needs: that is, the actions that do the most to reduce damages while meeting the community's minimum standards that are feasible and meet a majority of the "STAPLEE" criteria.

- ✓ Consider locally-important aspects and needs.
- ✓ Consider educational actions, as these can increase understanding of the Mitigation Plan and its requirements.

❑ Conduct Cost Benefit Review. Consider the following:

- ✓ Establish expenses for identified mitigation actions
- ✓ Review supplemental funding sources
- ✓ Identify benefits (short and long term).

❑ Prioritize actions. Give high priority to actions that will reduce hazard damages in the most vulnerable areas of the community.

Include some actions that can be completed quickly and easily as top priorities for the first projects.

EXAMPLE OF PRIORITY-SETTING:

You have gone through the exercise of identifying several actions that are deemed feasible, using the STAPLEE criteria outlined in Step 6. You then make the decision to give land-use issues a high priority, as well as those that do not involve large expenditures.

Proposed Objectives

- Purchase land that has been identified as being subject to hazard damage.
- Purchase emergency electric generators for all public buildings.
- Amend the zoning ordinance to limit development in damage-prone area
- Develop an education brochure for distribution at the library and town offices.

Prioritized Objectives

1. Amend the zoning ordinance to limit development in damage-prone areas.
2. Develop an educational brochure for distribution at the town library and town offices.
3. Purchase land that has been identified as being subject to hazard damage.
4. Purchase emergency electric generators for all public buildings.

PRODUCT

A list of specific priority objectives that best meet the Town's needs for hazard mitigation.

SUMMARY OF HAZARD MITIGATION PRIORITY ACTIONS

		Agency Funding Sources:				
Mitigation Action:	***Approximate Cost:***	***Federal Funds***	***State Funds***	***Local Funds***	***Cost/Benefit***	***Comments***